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Analyses of commercial fertilizers

William Carter Stubbs

SECOND SERIES,
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BULLETIN

OF THE

AGRICULTURAL EXPERIMENT STATION,

WM. C. STUBBS, PH. D., Director and Official State Chemist.

ANALYSES OF
COMMERCIAL FERTILIZERS.

ISSUED BY THE BUREAU OF AGRICULTURE. A. V. CARTER, COMMISSIONER.

BATON ROUGE, LA.
PRINTED AT THE TRUTH BOOK AND JOB OFFICE.
1895.

GUARANTEED ANALYSES OF COMMERCIAL FERTILIZERS, AS RENDERED TO COMMISSIONER OF AGRICULTURE, BY DEALERS AND MANUFACTURERS TO WHOM LICENSES HAVE BEEN ISSUED.

NAME OF FERTILIZER OR CHEMICAL.	BY WHOM REPORTED.		BY WHOM MANUFACTURED.	WHERE MANUFACTURED.	WEIGHT OF PACKAGE, POUNDS.	NITROGEN, PER CENT.	PHOSPHORIC ACID.			POTASH, PER CENT.
	NAME.	ADDRESS.					SOLUBLE, PER CENT.	REVERTED, PER CENT.	INSOLUBLE, PER CENT.	
Tobacco and Potato Fertilizer	Cincinnati Desiccating Co	Cincinnati, O.	Cincinnati Desiccating Co	Cincinnati, O.	200	3.30	4.	5.	3.	5.
Gilead Phosphate	Cincinnati Desiccating Co	Cincinnati, O.	Cincinnati Desiccating Co	Cincinnati, O.	200	2.50	4.	5.	3.	2.
Ohio Valley Phosphate	Cincinnati Desiccating Co	Cincinnati, O.	Cincinnati Desiccating Co	Cincinnati, O.	200	1.65	4.	4.	3.	2.
Cotton Fertilizer	Planters' Fertilizer Co	New Orleans, La	Planters' Fertilizer Co	New Orleans, La	100	2.00	8 to 10			2.
Sugar Fertilizer	Planters' Fertilizer Co	New Orleans, La	Planters' Fertilizer Co	New Orleans, La	100	3.50	7½ to 9			2.
Bat Guano	J. W. Hurxthall	Crystal Springs, Miss	Mined, Hurxthall & Marbock	Uvalde & Comal Cos. Tex.	100	2.40	total		9.	7.6
Stern's Amm. Raw Bone Superphosphate	S. G. & C. Manufacturing Co	New Orleans, La	S. G. & C. Manufacturing Co	New Orleans, La	100 & 200	2.00	4 to 6	4 to 6		1½ to 3
Standard Ammoniated Soluble Guano	S. G. & C. Manufacturing Co	New Orleans, La	S. G & C. Manufacturing Co	New Orleans, La	100 & 200	2.00	4 to 6	4 to 6		1½ to 3
Champion Farmers' Choice	S. G. & C. Manufacturing Co	New Orleans, La	S. G. & C. Manufacturing Co	New Orleans, La	100 & 200	2.00	4 to 6	4 to 6		1½ to 3
Vegetable Fertilizer	S. G. & C. Manufacturing Co	New Orleans, La	S. G. & C. Manufacturing Co	New Orleans, La	100 & 200	2.00	4 to 6	4 to 6		1½ to 3
Fruit Tree Fertilizer	S. G. & C. Manufacturing Co	New Orleans, La	S. G. & C. Manufacturing Co	New Orleans, La	100 & 200	3 to 5	4 to 6	2 to 4		5 to 7
Standard Sugar Cane Fertilizer	S. G. & C. Manufacturing Co	New Orleans, La	S G. & C. Manufacturing Co	New Orleans, La	100 & 200	2½ to 6			15 to 20	3 to 4
Caddo Cotton Fertilizer	Caddo Fertilizer Co	Shreveport, La	Caddo Fertilizer Co	Shreveport, La	100 & 200	2 to 3½	7 to 9	3 to 4		2 to 3
Caddo Corn and Cane Fertilizer	Caddo Fertilizer Co	[illegible]	Caddo Fertilizer Co	Shreveport, La	100	2.05	Available. 8.			2.
Caddo Vegetable Fertilizer	Caddo Fertilizer Co	Shreveport, La	Caddo Fertilizer Co	Shreveport, La	100	3.28	5.			3.
World of Good Veg., Truck & Potato Grower	Thompson & Edwards	Chicago, Ill	Thompson & Edwards	Chicago, Ill	100 & 200	3 to 4	6 to 8.	8 to 10		4.
Chicago Bone Meal	Thompson & Edwards	Chicago, Ill	Thompson & Edwards	Chicago, Ill	100 & 200	2 to 3	14 to 18			6 to 8
Cotton Fertilizer	C. C. Oil Mills Co	Baton Rouge, La	C. C. Oil Mills Co	Baton Rouge, La	100 & 200	3.93	3.84	3.07	.9	2 to 3
Pelican Sugar Cane Grower	N. W. Fertilizer Co	Chicago, Ill	N. W. Fertilizer Co	Chicago, Ill	100 & 200	2.06 to 2.90	2 to 4	6 to 8	2 to 3	1.95
Pelican Cotton and Corn Grower	N. W. Fertilizer Co	Chicago, Ill	N. W. Fertilizer Co	Chicago, Ill	200	1.65 to 2.05	2 to 4	6 to 8	2 to 3	54 to 1.08
Ammoniated Dissolved Bone	N. W. Fertilizer Co	Chicago, Ill	N. W. Fertilizer Co	Chicago, Ill	100 & 200	1.65 to 2.05	2 to 4	6 to 8	2 to 3	54 to 1.08
Producer	Capital City Fertilizer Mfg Co	Jackson, Miss	Capital Fertilizer Mfg Co	Jackson, Miss	200	1.50	7 to 8	2 to 3	½ to 1	54 to 1.08
Nonpariel	Capital Fertilizer Mfg Co	Jackson, Miss	Capital Fertilizer Mfg Co	Jackson, Miss	200	1.50	7 to 8	2 to 3	½ to 1	2 to 3
Red Star Brand Guano	Capital Fertilizer Mfg Co	Jackson, Miss	Capital Fertilizer Mfg Co	Jackson, Miss	200	1.50	7 to 8	2 to 3	½ to 1	2 to 3
Royal C. Brand	Jackson Fertilizer Co	Jackson, Miss	Jackson Fertilizer Co	Jackson, Miss	100 & 200	1.55	6.	1.6	1.	1.8
Gulf States Guano	Jackson Fertilizer Co	Jackson, Miss	Jackson Fertilizer Co	Jackson, Miss	100 & 200	1.5	5.	2.	1.	1.8
C. C. Brand	Jackson Fertilizer Co	Jackson, Miss	Jackson Fertilizer Co	Jackson, Miss	200	1.	6.	½.	1.	1.5
Complete Vegetable and Fruit Fertilizer	Jackson Fertilizer Co	Jackson, Miss	Jackson Fertilizer Co	Jackson, Miss	200	3.	3.	3.	1.	4.
Soluble Sea Island Guano	Raisin Fertilizer Co	Baltimore, Md	Raisin Fertilizer Factory	Baltimore, Md	200	2.	5.	4.	1.	1.50
Home Mixture Guano	Meridian Fertilizer Factory	Meridian, Miss	Meridian Fertilizer Factory	Meridian, Miss	100 & 200	1.8	7.	2.	1.	1.9
Southern Soluble Guano	Meridian Fertilizer Factory	Meridian, Miss	Meridian Fertilizer Factory	Meridian, Miss	100 & 200	1.8	7.	2.	1.	1.9
Blood, Bone and B	Meridian Fertilizer Factory	Meridian, Miss	Meridian Fertilizer Factory	Meridian, Miss	100 & 200	1.8	7.	2.	1.	1.9
Pelican Brand, Formula No. 4	N. W. Fertilizer Co	U. S. Yards, Chicago, Ill.	N. W. Fertilizer Co	U. S. Yards, Chicago, Ill.	100 & 200	3.29 to 4.10	4 to 4½	4 to 4½	2 to 3	
Corn Fertilizer	Shreveport Fertilizer Co	Shreveport, La	Shreveport Fertilizer Co	Shreveport, La	100 & 200	3.	Available. 6.			
Hill Cotton Fertilizer	Shreveport Fertilizer Co	Shreveport, La	Shreveport Fertilizer Co	Shreveport, La	100 & 200	2.	8.			
Alluvial Cotton Fertilizer	Shreveport Fertilizer Co	Shreveport, La	Shreveport Fertilizer Co	Shreveport, La	100 & 200	1.	[illegible]			
Vegetable Fertilizer	Shreveport Fertilizer Co	Shreveport, La	Shreveport Fertilizer Co	Shreveport, La	100 & 200	3.	6.			
Plant Cane Fertilizer	Shreveport Fertilizer Co	Shreveport, La	Shreveport Fertilizer Co	Shreveport, La	100 & 200	3½	7.			
Stubble Cane Fertilizer	Shreveport Ferti izer Co	Shreveport, La	Shreveport Fertilizer Co	Shreveport, La	100 & 200	4.	4.			
Rice Fertilizer	Shreveport Fertilizer Co	Shreveport, La	Shreveport Fertilizer Co	Shreveport, La	100 & 200	2.	8.			
Tobacco Fertilizer	Shreveport Fertilizer Co	Shreveport, La	Shreveport Fertilizer Co	Shreveport, La	100 & 200	4.	4.			
Acid Phosphate	Shreveport Fertilizer Co	Shreveport, La	Shreveport Fertilizer Co	Shreveport, La	100 & 150		14½			
Ground Bone	Standard Guano & Chemical Mfg Co	New Orleans, La	Standard Guano & C. Mfg Co	New Orleans, La	100 & 200	2½ to 3½			18 to 21	
Dissolved Bone	Standard Guano & Chemical Mfg Co	New Orleans, La	Standard Guano & C. Mfg Co	Nvw Orleans, La	100 & 200		13 to 14	2 to 4		
Kainite	Standard Guano & Chemical Mfg Co	New Orleans, La	German Kati Works	Germany	100 & 200					12 to 14
Caddo Acid Phosphate	Caddo Fertilizer Co	Shreveport, La	Caddo Fertilizer Co	Shreveport, La	100		Available. 10			2½
Caddo Dissolved Bone	Caddo Fertilizer Co	Shreveport, La	Caddo Fertilizer Co	Shreveport, La	100		13½			
German Kainite	Caddo Fertilizer Co	Shreveport, La	Caddo Fertilizer Co	Shreveport, La	100					12.96
Pure Ground Bone, Crescent City Brand	Jac Trautman & Co	New Orleans, La	Empire Carbon Works	St. Louis, Mo	200	2.87			48 to 50	
Pure Fine Ground Bone	Thompson & Edwards	Chicago, Ill	Thompson & Edwards	Chicago, Ill	100 & 200	3 to 4	Available. 22 to 26			
Durham Bone and Blood	Thompson & Edwards	Chicago, Ill	Thompson & Edwards	Chicago, Ill	100 & 200	6½ to 8	20 to 30			
Animal Dissolved Bone Meal	Thompson & Edwards	Chicago, Ill	Thompson & Edwards	Chicago, Ill	100 & 200	2 to 3	14 to 15-3 to 4			
Acid Phosphate	Jackson Fertilizer Co	Jackson, Miss	Jackson Fertilizer Co	Jackson, Miss	100 & 200		10½	2½	1.	
No. 1 Ground Tankage	Swift & Co	Chicago, Ill	Swift & Co	Chicago, Ill	100	7.			6.90 to 9	
National Bone Dust	N. W. Fertilizer Co	Chicago, Ill	N. W. Fertilizer Co	Chicago, Ill	200	1.65 to 2.50	2 to 4	6 to 8	2 to 3	
Pure Ground Bone	N. W. Fertilizer Co	Chicago, Ill	N. W. Fertilizer Co	Chicago, Ill	200	2.5 to 3			15 to 20	
Ground Tankage	N. W. Fertilizer Co	Chicago, Ill	N. W. Fertilizer Co	Chicago, Ill	100 to 125	4.20 to 5.75			10 to 15	
Ground Tankage	N. W. Fertilizer Co	Chicago, Ill	N. W. Fertilizer Co	Chicago, Ill	100 & 125	5.25 to 6.58			10 to 15	
Acid Phosphate	Capital Fertilizer Mfg Co	Jackson, Miss	Capital Fertilizer Co	Jackson, Miss	200		9 to 11	2 to 3	½ to 1	
Acid Phosphate	Jackson Fertilizer Co	Jackson, Miss	Jackson Fertilizer Co	Jackson, Miss	200		12½	2.		
German Kainite	Jackson Fertilizer Co	Jackson, Miss	Jackson Fertilizer Co	Jackson, Miss	200					12.
Southern Acid Phosphate	Meridian Fertilizer Co	Meridian, Miss	Meridian Fertilizer Co	Meridian, Miss	200		13.	2.	1.	
Fine Ground Bone	Cincinnati Desiccating Co	Cincinnati, Ohio	Cincinnati Desiccating Co	Cincinnati, O	200	3.3			20.	

LOUISIANA STATE UNIVERSITY AND A. & M. COLLEGE.

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The Bulletins and Reports will be sent free of charge to all farmers, by applying to Commissioner of Agriculture, Baton Rouge, La.

OFFICE BUREAU OF AGRICULTURE,
Baton Rouge, La., Nov. 1, 1895.

To His Excellency, Murphy J. Foster, Governor of Louisiana and President of the State Bureau of Agriculture:

SIR—In compliance with the provisions of Act 54 of 1888 and Act 131 of 1890, herein please find the analyses made by Dr. Wm. C. Stubbs, Director and Official Chemist; also a list of the Commercial Fertilizers sold in the State during the season of 1894-'95; their guaranteed analyses, names of dealers to whom licenses have been issued, etc. I also append the same with regard to Paris Green, as required by a recent act. The prices of fertilizers remain about the same as last year, and no material change need be expected. Other analyses of an agricultural nature are given in this report for the benefit of farmers and planters.

A. V. CARTER,
Commissioner, Bureau of Agriculture.

LOUISIANA STATE UNIVERSITY AND A. AND M. COLLEGE,
OFFICE OF EXPERIMENT STATIONS,
Baton Rouge, Louisiana.

Col. A. V. Carter, Commissioner of Agriculture, Baton Rouge, La.:

DEAR SIR—I hand you herewith the Analyses of Commercial Fertilizers and Paris Green, made in the Station Laboratory since last season. Since the Fertilizer Law was re-enacted with considerable changes by our last Legislature, I have included it in the present report. I ask that this be published in Bulletin form.

Respectfully submitted,
WM. C. STUBBS,
Director and State Chemist.

REPORT OF THE DIRECTOR AND STATE CHEMIST.

The analyses of commercial Fertilizers contained in the report are of four kinds :

1. Of samples selected at the discretion of the Commissioner of Agriculture.

2 Of samples drawn by the purchaser, under regulations prescribed by the Commissioner of Agriculture.

The above are required by law.

3. Of samples used by the Stations.

4. Of samples sent by private parties.

While the Station is not required by law to work for private parties, yet all samples sent by individual citizens of the State will be analyzed without charge; *provided*, the means of the Station will permit ; *provided*, always, that in the Discretion of the Director such analyses will be conducive to public welfare.

The Fertilizer Law, in part, is herein inserted for the guidance of the public. Under it, every citizen of the State is amply protected from fraud and imposition by unscrupulous dealers, and there exists absolutely no cause for distrust in the purchase of commercial fertilizers, if the farmer will but claim the protection afforded him. The sellers of good wares are also protected, as ample facilities are afforded them of properly advertising their goods.

Only cotton seed meal, land plaster, salt, ashes and lime are exempt from the provisions of this law.

The following is the law :

SEC. 2. *Be it further enacted, etc.*, That it shall be the duty of any manufacturer or dealer in commercial fertilizers (which term shall not be held to include lime, land plaster, cotton seed meal, ashes or common salt), before the same are offered for sale in this State, to submit to the Commissioner of Agriculture for inspection and to furnish a written or printed statement setting

forth: First—The name and brand under which said fertilizers is to be sold, the number of pounds contained or to be contained in the package in which it is to be put upon the market for sale, and the name or names of the manufacturers, and the place of manufacture. Second—A statement setting forth the amount of the named ingredients which they are willing to guarantee said fertilizers to contain (1) nitrogen, (2) soluble phosphoric acid. Third—Reverted phosphoric acid. Fourth—Insoluble phosphoric acid. Fifth—Potash. Said statement, so to be furnished, shall be considered as constituting a guarantee to the purchaser that every package of such fertilizer contains not less than the amount of each ingredient set forth in the statements. This shall, however, not preclude the party making the statement from setting forth any other ingredient which his fertilizer may contain, which additional ingredients shall be considered as embraced in the guarantee above stated. That an inspection fee of fifty cents per ton upon all fertilizers sold for use in this State shall be paid by the sellers thereof to the Commissioner of Agriculture, which inspection fee shall cover the cost of actual inspection, all analyses of samples, made by the Commissioner or his official chemist of his own volition or at the request of either the seller or the buyer, and the certificate to be furnished by him; and payment of said inspection fee shall be evidenced by tags to be furnished by the Commissioner of Agriculture sufficient in number to place one upon each package of fertilizer required to make up a ton according to the way in which the particular fertilizer may be packed and shipped.

SEC. 3. *Be it further enacted, etc.* That every person proposing to deal in commercial fertilizers shall, after submitting the same for inspection and filing the statement above provided for with the Commissioner of Agriculture, receive from the said Commissioner of Agriculture a certificate stating that he has complied with the foregoing section, which certificate shall be furnished by the Commissioner of Agriculture without any additional charge therefor. That the said certificate, when furnished, shall authorize the party receiving the same to manufacture for sale in this State, or to deal in this State in commercial

fertilizers or to sell fertilizers for use in this State. That no person who has failed to file the statement aforesaid and to receive the certificate of authority aforesaid, shall be authorized to manufacture for sale in this State or to deal in commercial fertilizers, or to sell fertilizers for use in this State, and any person so manufacturing for sale in this State, or so dealing, or selling for use in this State without having submitted his fertilizers for inspection and filed the aforesaid statement and receiving the certificate aforesaid shall be liable for each violation to a fine not exceeding one thousand dollars ($1000), which fine shall be recoverable before any court of competent jurisdiction, at the suit of the Commissioner of Agriculture or any citizen, without bond or advanced cost, and shall be disposed of as hereafter provided.

SEC. 4. *Be it further enacted, etc.,* That it shall be the duty of the Bureau of Agriculture or its commissioners, at the opening of each season, to issue and distribute circulars setting forth the brands of fertilizers sold in this State, their analysis as claimed by their manufacturers or dealers and their relative and if known, their commercial value.

SEC. 5. *Be it further enacted, etc.,* That it shall be the duty of the Commissioner of Agriculture, under the regulations of said bureau, to cause to be prepared tags of suitable material, with proper fastenings for attaching the same to packages of fertilizers, and to have printed thereon the word "Guaranteed," with the year or season in which they are to be used, and a fac simile of the signature of the said commissioner. The said tag shall be furnished by said commissioner to any dealer in or manufacturer of commercial fertilizers, who shall have complied with the foregoing provisions of this act upon the payment by said dealer or manufacturer to the said commissioner of fifty cents for a sufficient number of tags to tag a ton of such commercial fertilizer, as evidence of payment of the inspection fee provided for in section two.

SEC. 6. *Be it further enacted, etc.,* That it thall be the duty of every person, before offering for sale any commercial fertilizers in this State or for use in this State, to attach or cause to be attached to each bag, barrel or package thereof, one of the tags

herein before described, designating the quantity of the fertilizer in the bag, barrel or package to which it is attached, as evidence of the payment of the inspection fee imposed by Section 2. Any person who shall sell or offer for sale, any package of commercial fertilizer which has not been tagged as herein provided, shall be guilty of a misdemeanor, and on conviction thereof shall be fined in the sum of two hundred and fifty dollars ($250) for each offense; and the said person shall be besides liable to a penalty of one hundred and fifty dollars ($150) for each omission, which penalty may be sued for either by the Commissioner of Agricul ture or any other person for the uses hereafter declared. And it shall be the duty of the Attorney General and of the several District Attorneys when requested by the Commissioner of Agriculture to enjoin any person, firm or corporation, resident or nonresident, from manufacturing or selling fertilizers in this State, or selling fertilizers for use in this State, without complying with all the provisions of this act, without bond or advanced cost. Any person who shall counterfeit or use a counterfeit of the tag prescribed by this act, knowing the same to be counterfeited, or who shall use them a second time, shall be guilty of a misdemeanor, and on conviction thereof shall be fined in a sum not exceeding five hundred dollars ($500), one half of which fine shall be paid to the informer; which fine may be doubled or tripled at each second or third conviction, and so on progressively for subsequent conviction.

SEC. 7. *Be it further enacted, etc.*, That all fertilizers or chemicals for manufacturing or composting the same, offered for sale or distribution in this State, shall have printed upon or attached to bag, barrel, or package, in such a manner as the Commissioner of Agriculture may, by regulation, establish the true analysis of such fertilizer or chemical as claimed by the manufacturer, showing the per cent. of valuable ingredients such fertilizers or chemicals contained.

SEC. 8. *Be it further enacted, etc.*, That the Commissioner of Agriculture may inspect or cause to be inspected and may obtain or cause to be obtained at his discretion, fair samples of all fertilizers sold or offered for sale in this State or offered for

sale or sold for use in this State from manufacturers or dealers, and shall have them analyzed by the official chemist, and shall publish the analysis for the information and protection of the public.

SEC. 9. *Be it further enacted, etc.*, That it shall be the duty of every person who sells a lot or package of commercial fertiliser, upon the request of the purchaser to draw from the same, in the presence of the purchaser or his agent, a fair and correct sample in such a manner as the Commissioner of Agriculture may, by regulation, establish, and submit the same for inspection as hereinbefore provided.

SEC. 10. *Be it further enacted, etc.*, That no fraudulent fertilizers shall be sold for use in this State; that the price of fraudulent fertilizers shall not be collected by law; that no person buying fraudulent fertilizers in this State or sold for use in this State shall be bound in any manner to pay the price or cost thereof; that all fertilizers sold in this State or for use in this State without having been inspected or tagged as provided for in this act shall be conclusively presumed to be fraudulent fertilizers within the meaning of this prohibitory law, the price of which cannot be collected, and all notes, contracts and obligations based on the sale thereof shall be null and void.

SEC. 11. *Be it further enacted, etc.*, That the Bureau of Agriculture shall adopt needful rules and regulations providing for the inspection of fertilizers, the collection of the money arising from the issuance of tags as evidence of inspection and from fines imposed under this act, and shall require the same to be deposited with the Treasurer of the State and only to be drawn therefrom upon the warrants issued by the Auditor of the State upon the requisition of the Commissioner of Agriculture made in pursuance of such rules and regulations; and the said Commissioner of Agriculture shall be entitled to receive no fees for collecting or disbursing said money, except his salary as provided for by law, but he shall be allowed a clerk at the salary to be fixed by the said Bureau and payable out of the Fertilizer Fund; and all sums of money arising from the provisions of this act shall be known as the "Fertilizer Fund," and shall be kept

by the Treasurer separate from other public funds, and shall be exclusively used, as far as they may go, to defray the expenses of inspection and analysis herein required, and of making practical and scientific experiments with fertilizers to test their virtue and value.

The following, taken from a previous Bulletin, is herein inserted as explanatory of the terms so be subsequently used :

COMMERCIAL FERTILIZERS.

The ingredients which give value to all commercial fertilizers are: 1st, Nitrogen (Ammonia); 2d, Phosphoric Acid; 3d, Potash. A fertilizer may contain one, two or all of these ingredients, and may consist of, (1) Nitrogen (Ammonia) alone; (2) Phosphoric Acid alone; (3) Potash alone; (4) Nitrogen (Ammonia) and Phosphoric Acid; (5) Phosphoric Acid and Potash; (6) Nitrogen (Ammonia) and Potash. No. 6 is rarely found in Southern markets; the others are common wares.

(1) NITROGEN MANURES.

Nitrogen is the most costly ingredient in manures. It is offered to the trade in three forms :

(*a*) Mineral Nitrogen—in Nitrate of Soda and Sulphate of Ammonia.

(*b*) Animal Nitrogen—in Dried Blood, Tankage, Azotin, Ammonite, Fish Scrap and Leather.

(*c*) Vegetable Nitrogen—in Cotton Seed, Cotton Seed Meal, Linseed Meal, Castor Pomace and Peat.

Blood, Tankage, Fish Scraps and Oil Meals are highly active fertilizers, while Leather and Peat are slowly available. The result of decomposition of organic forms of Nitrogen is either Ammonia or Nitric Acid; fourteen parts of Nitrogen yielding seventeen parts of Ammonia, or twenty eight parts of Nitrogen, forming, by nitrification, one hundred and eight parts Nitric Acid. The mineral forms of Nitrogen are highly prized in the North and in England; but in the South, on account of the ease with which they are washed from the soil, they should be used with great care.

Cotton Seed Meal contains, besides Nitrogen, small amounts of Phosphoric Acid and Potash. A fair sample of meal, *free from hulls*, should yield 7 per cent. Nitrogen, 3 per cent. Phosphoric Acid and 2 per cent. Potash. This is a cheap source of Nitrogen, and experiments have demonstrated that it is, perhaps, the best form for Southern agriculture. In buying it, however, *caution* is necessary to see that it is well decorticated, *i. e.*, free from hulls. Samples containing 30 per cent. of hulls have been found on the market.

(2) PHOSPHORIC ACID MANURES.

These are generally phosphatic rocks treated with Sulphuric Acid. Sometimes pure bones or bone black, or bone ash are treated with the same acid, and the resulting mixtures styled Dissolved Bones or Superphosphates. When made from phosphatic rock, bone black or bone ash, they contain only Phosphoric Acid. When pure bones are used, 3 to 5 per cent. of Ammonia is also found. These phosphatic manures usually contain their Phosphoric Acid in different forms. Some of it is readily soluble in water, and is highly available as plant food; some of it is only soluble in acids, and is, therefore, only slowly, if at all, available to plants, while another portion is intermediate in solubility between the water soluble and the acid soluble. The Chemist uses Citrate of Ammonia to dissolve this form; and hence it is denominated as Citrate Soluble Phosphoric Acid. It is believed by many that this form of Phosphoric Acid has resulted from a chemical action of the water soluble upon the acid soluble, and hence it is often called "*reverted*," "*reduced*," etc. The water soluble is readily available on all soils and by all plants; the citrate soluble in soils containing vegetable matter is believed to be available to many plants, while the acid soluble is immediately useful only to certain plants and upon certain soils. The water soluble and citrate soluble are usually taken together and called Available Phosphoric Acid. In buying phosphatic manures, preference should be given, first to the water soluble, then to the citrate soluble. If there is much Acid Soluble Phosphoric Acid present, inquiry should be at once made as to its origin, for the Insoluble Phosphoric Acid from bones is more

easily transferred into plant food than that from rock. These three forms of Phosphoric Acid are usually called "soluble," "reduced" and "insoluble."

(3) POTASH MANURES.

These are now obtained almost exclusively from Leopoldshall and Stassfurth, Germany, and are largely sold in this country as—

(*a*) Kainite, which is a crude product of the mines, and consists of Potash, Magnesia, Soda, Sulphuric Acid and Chlorine. This form of Potash is now extensively used in the South either in the compost of stable manure, cotton seed and Acid Phosphate, or mixed with Acid Phosphate and cotton seed meal to form a complete manure. Whether our soil needs Potash can only be determined experimentally. After careful experimentation the right quantities can be easily determined. It is a cheap and excellent source of Potash.

(*b*) Sulphate of Potash, a refined product, containing a large amount of potash in a very desirable form, is extensively used in some countries, upon certain crops, notably tobacco and Irish potatoes.

(*c*) Muriate of Potash, another refined product, containing a large percentage of Potash. This salt furnishes Potash in the cheapest form.

(4) NITROGEN AND PHOSPHORIC ACID.

Formerly bones, treated with Sulphuric Acid, were frequently found upon our market; recently, however, Potash, in some form, has been added to them. Whether this addition has been made by the demands of the soil or by the inclination of the manufacturers, is yet to be determined. Potash is the cheapest ingredient in fertilizers, and any demand for it is readily met. At present we find on our markets a manure of this class which is being extensively used under sugar cane, viz.: *Tankage.* This is a variable goods, containing usually from 4 to 12 per cent of Nitrogen, and from 6 to 20 per cent. Phosphoric Acid. This latter is in the insoluble form; but, being of the animal origin, upon certain soils is slowly available if finely pulverized.

(5) PHOSPHORIC ACID AND POTASH.

To make Acid Phosphates suitable for composting, many dealers have recently added Potash. This addition necessarily lowers the percentage of Phosphoric Acid. Manufacturers in and around Charleston, S. C., have adopted the custom of calling this class of goods "Acid Phosphates," and those which contain no Potash "Dissolved Bones." These are extensively used for the compost of stable manure and cotton seed.

(6) NITROGEN AND POTASH.

The great and crying want of Southern soils is Phosphoric Acid; hence no manure without it has hitherto met with favor. Accordingly this class of manures is rarely met with in the South.

COMPLETE MANURES

are those which contain Nitrogen, Phosphoric Acid and Potash. For different crops these ingredients should exist in different proportions.

Before purchasing any fertilizer the farmer should study well the wants of his soil and his crop and buy accordingly.

Before buying get from the dealer replies to the following questions:

How much soluble Phosphoric Acid do you guarantee?

How much Reverted Phosphoric Acid do you guarantee?

How much Ammonia do you guarantee?

How much Potash do you guarantee?

By using the table of Tariff one can easily estimate the approximate commercial value of a ton of any commercial fertilizer presented to him with a complete analysis of the same.

LABORATORY WORK.

The work done in the Laboratories of the Experiment Stations in the past year comprises the following:

21. Ammoniated Superphosphates and Guanos.
7. Acid Phosphates.
28. Cotton Seed Meals.
12. Tankage.
4. Bone Meals.
7 Miscellaneous.

In a plain Acid Phosphate at least 12 per cent. available Phosphoric Acid should be guaranteed. In cane fertilizers, 3 per cent. Ammonia and 7 per cent Phosphoric Acid, and in cotton fertilizers 2 per cent. Ammonia and 8 per cent. of Phosphoric Acid should be found.

VALUATION OF FERTILIZERS.

The commercial value of a fertilizer is regulated by the prices demanded in commerce for the different forms of the three ingredients, Nitrogen (Ammonia), Phosphoric Acid and Potash. These prices fluctuate according to the demand and supply. In the North, Nitrogen is assigned a separate valuation for each of its forms—that in Nitrates and Ammonia Salts receiving the highest figure, and in leather and peat the lowest.

In Connecticut or Massachusetts, a determination of the forms in which this ingredient occurs must be made before its commercial value can be calculated. All the forms of Nitrogen have heretofore been considered of equal money value in the South, and but one price assigned. This, of course, precludes the existence of Nitrogen in form of leather dust, or powdered horn, forms regarded as unavailable and of little money or agricultural value.

The soluble and reverted forms of Phosphoric Acid have together been styled as "available," and assigned one value. The insoluble Phosphoric Acid has received no valuation. All forms of Potash soluble in water have been regarded as of equal value.

The following tariff of prices heretofore used was far too high for the season just ended :

Ammonia, 16 cents per pound.
Nitrogen, 19½ cents per pound.
Soluble Phosphoric Acid, 7½ cents per pound.
Reverted Phosphoric Acid, 7½ cents per pound.
Potash (soluble in water), 5 cents per pound.

No tariff for the ensuing year has been adopted. The extremely low prices of all kinds of fertilizers last season suggest the propriety of awaiting the opening of the market for the

present year before adopting a tariff. However, the above prices may be used to illustrate the method by which the commercial value of a fertilizer may be approximately estimated. *E G*, good cotton seed meal contains 7 per cent. Nitrogen, 3 per cent. Phosphoric Acid and 2 per cent. Potash. Estimating its Nitrogen alone at 19½ cents per pound, a ton would have a commercial value of $27.30, when it is known that large lots during the past season were sold at from $12 to $15 per ton. However, cotton seed meal does not furnish us with a correct basis for estimation of commercial values, since it is a home product and only a small portion of our output enters into local consumption, the greater part going to Northern and European markets. This export demand regulates the price and hence usually the cheapest form of Nitrogen is presented to us in cotton seed meal.

AMMONIATED SUPERPHOSPHATES AND GUANOS.

Ammoniated Superphosphates and Guanos constitute the chief bulk of the fertilizers consumed by the farmers of the Southern States. The term "complete fertilizer" is often applied to them on account of the fact that they contain all three of the most essential fertilizing constituents, and their range of adaptability is, in consequence, much greater than that of any of the partial manures. As might be supposed, there is great diversity in the composition of fertilizers of this class, both as regards the proportions of their fertilizing ingredients and also the forms in which they are supplied, the quantities of these essential constituents being so regulated as to correspond with the manufacturer's ideas as to the demands of our principal crops.

AMMONIATED SUPERPHOSPHATES AND GUANOS.

Station No.

13. Fertilizer, sent by L. M. Soniat, Dorceyville, La.

745. Bone and Blood, sent by Commissioner of Agriculture, Baton Rouge, La.; manufactured by Meridian Fertilizer Company, Meridian, Miss.

749. Corn Fertilizer, sent by Caddo Fertilizer Manufacturing Company, Shreveport, La.

753. Cotton Fertilizer, sent by Caddo Fertilizer Company, Shreveport, La.

Station No.

756. Cotton Fertilizer, sent by Caddo Fertilizer Company, Shreveport, La.

757. Corn Fertilizer No. 1, sent by Caddo Fertilizer Company, Shreveport, La.

758. Corn Fertilizer No. 2, sent by Caddo Fertilizer Company, Shreveport, La.

768. Soluble Sea Island Guano, sent by Commissioner of Agriculture, Baton Rouge, La.; manufactured by the Raisin Fertilizer Company, Baltimore, Md. Bought of John Tate & Co. by Thos. J. Bridges.

769. Cotton Fertilizer, sent by Commissioner of Agriculture, Baton Rouge, La.; manufactured by Planters' Fertilizer Manufacturing Company, New Orleans, La. Bought of John Tate & Co., by Thos. J. Bridges.

776. Standard Home Mixture Guano, sent by C. G. Steadman, Wilson, La.

777. Bat Guano, sent by C. G. Steadman, Wilson, La. From Bat Mines, Texas.

782. Fertilizer, sent by Hymel Bros., through Commissioner of Agriculture, Baton Rouge, La.

785. Fertilizer, sent by Hymel Bros., Camperdown Plantation, Bayou Teche; manufactured by Standard Guano and Chemical Manufacturing Company.

787. Gilliad Phosphate, sent by C. A. Tiebout, Roseland, La., manufactured by Cincinnati Desiccating Company.

789. Fertilizer, sent by B. Lemann & Bro., Bayou Lafourche; manufactured by the Standard Guano and Chemical Company, New Orleans.

790. Fertilizer, sent by Numa Vives, Cecelia Plantation; manufactured by Standard Guano and Chemical Company; witness, F. Bergeron.

791. Fertilizer, sent by A. Lemann & Bro., Lafourche; manufactured by Standard Guano and Chemical Company; witness, E. M. Charlet.

792. Fertilizer, sent by Landry and Duggan, Sweet Home; manufactured by Standard Guano and Chemical Company, New Orleans.

Station No.

793. Fertilizer, sent by T. P. Hymel, Bayou Lafourche; manufactured by Standard Guano and Chemical Company.

794. Fertilizer, sent by N. G. Warehouse and Security Company, Ingleside Plantation, La.; manufactured by Standard Guano and Chemical Company.

795. Fertilizer, sent by Jackson & Cobb, Lake Landing, La.; manufactured by Cotton Planters' Manufacturing Company, New Orleans, La.; witness, M. L. Fahy.

ANALYSES OF AMMONIATED SUPERPHOSPHATES AND GUANOS.

Station Number.	Phosphoric Acid.				Nitrogen.	Equivalent to Ammonia.	Potash.
	Soluble.	Reverted.	Insoluble.	Total.			
13	5.95	2.14	5.71	13.22	2.10	2.55	.95
745	7.61	1.59	3.90	13.10	2.97	3.61	1.94
749	5.03	3.20	1.10	9.24	3.87	4.70	.49
753	5.75	3.24	1.04	10.03	3.17	3.48	.98
756	7.10	2.16	0.40	9.66	3.67	4.46	Not guaranteed
757	6.00	1.88	.37	8.25	4.14	5.03	Not guaranteed
758	4.54	2.11	.38	7.03	4.38	5.30	Not guaranteed
768	7.17	2.50	2.81	12.48	1.96	2.38	2.08
769	6.80	1.13	.31	8.24	2.03	2.46	1.89
776	9.44	1.42	.48	11.34	2.01	2.43	1.77
777	.72	5.59	10.42	16.73	3.85	4.68	.78
782	5.53	2.19	.91	8 63	3.96	4.81	Not guaranteed
785	4.92	3.34	1.06	9.32	3.11	3.78	1.38
787	5.45	2.39	3.97	11.81	2.80	3.40	1.43
789	3.96	3.03	0.34	7.33	4.11	4.99	2.45
790	4.96	3.28	1.32	9.56	3.39	4.12	.67
791	8.64	2.97	.84	12.45	2 12	2.57	1.81
792	7.05	2.53	.84	10.42	2.40	2.91	2.04
793	8.28	2.38	.72	11.38	2.10	2.62	1.98
794	4.90	2.25	.88	8.03	1.90	2.31	1.42
795	6.85	2.80	.12	9.77	2.08	2.53	1.40

ACID PHOSPHATES.

Acid Phosphates, or Superphosphates, contain only one fertilizing constituent of value, viz: Phosphoric Acid, but this ingredient is almost invariably present in three forms. Fertilizers of this class are produced by the action of sulphuric acid upon insoluble phosphates, a large proportion of the Phosphoric Acid being thus rendered soluble, and consequently much more readily assimilable by the plant.

ACID PHOSPHATES.

Station No.

755. Sent by Caddo Fertilizer Company, Shreveport, La.

759. Sent by Planters' Fertilizer Company, New Orleans, La.

760. 12 per cent. Available Acid Phosphate, sent by Planters' Fertilizer Manufacturing Company, New Orleans, La.

783. Sent by C. A. Tiebout, Roseland, La.; manufactured by Jackson Fertilizer Company.

29. Dissolved Bone Ash, sent by Powell & Co., Baltimore, Md.

40. Acid Phosphate, sent by William B. Schmidt, New Orleans, La.

46. Acid Phosphate, sent by Sugar Experiment Station.

ANALYSES OF ACID PHOSPHATES.

Station Number.	Soluble Phosphoric Acid.	Reverted Phosphoric Acid.	Insoluble Phosphoric Acid.	Total Phosphoric Acid.
755	16.72	1.85	0.05	18.62
759	13.81	.54	.11	14.46
760	12.80	.92	.18	13.90
783	13.80	2.13	.98	17.91
29	15.55	3.05	2.30	20.90
40	14.72	3.58	1.15	19.45
46	15.84	0.71	0.55	17.08

A sample of phosphate purchased by Mr. J. O. Daspit, of Houma, and applied to his crop in 1893, was dug up and with the soil removed as far as possible, was sent to the Laboratory. It had, after lying in the ground for twelve months and mixed more or less with soil, the following composition: Soluble Phosphoric Acid, .41 per cent; Reverted Phosphoric Acid, .57 per cent.; Insoluble Phosphoric Acid, 13.74 per cent. The phosphate used was a natural unammoniated guano.

COTTON SEED MEAL.

This, to the Southern farmer, is the cheapest and most easily obtainable form of Nitrogen. Although it has acquired an extensive use as a fertilizer throughout the whole State, it has been exempted from the operations of the fertilizer law by virtue of its employment as a feeding stuff.

On account of the presence of quite appreciable quantities of hulls in many samples of meal found upon the market, it is ve·y essential that great care should be observed in the purchase

of this article. Hulls can easily be detected by the non homogeneous appearance of the meal containing them and also by passing a small quantity of the meal through an ordinary sifter.

The best, undamaged meal, has a bright yellow color and is dry and pulverulent.

The damaged meal is invariably darker in color, and though rendered unfit for use as a feed stuff, does not lose any of its value for fertilizing purposes.

Station No.

1. Sent by Peuch & Freret, New Orleans, La.
2. Sent by Peuch & Freret, New Orleans, La.
3. Sent by Wm Harris, Alexandria, La.
4. Sent by Wm. Harris, Alexandria, La.
5. Sent by Peuch & Freret, New Orleans, La.
6. Sent by Schmidt & Zeigler, New Orleans, La.
7. Sent by John T. Moore, Jr., Schriver, La.
9. Sent by F. W. Nicholls, Thibodaux, La.
10. Sent by F. W. Nicholls, Thibodaux, La.
11. Sent by W. B. Schmidt, New Orleans, La.
12. Sent by Peuch & Freret, New Orleans, La.
14. Sent by L. M. Soniat, Dorceyville, La.
15. Sent by Conway & Shaffer, New Orleans, La.
30. Sent by Conway & Shaffer, New Orleans, La.
32. Sent by Peuch & Freret, New Orleans, La.
34. Sent by J. O. Daspit, Houma, La.
37. Sent by Union Oil Company, New Orleans, La.
38. Sent by John T. Moore, Schriver, La.
41. Sent by Lewis S. Clark, Patterson, La.
42. Sent by Wm. B. Schmidt, New Orleans, La.
45. Sent by Daniel Thompson, Patterson, La.
50. Sent by Planters' Fertilizer Company, New Orleans, La.
52. Sent by Lewis S. Clark, Patterson, La.
53. Sent by Peuch & Freret, New Orleans, La.
54. Sent by Wm. B. Schmidt, New Orleans, La.
58. Sent by Thomas J. Duggan, New Orleans, La.
59. Sent by Peuch & Freret, New Orleans, La.
752. Sent by Planters' Fertilizer Company, New Orleans, La.

ANALYSES OF COTTON SEED MEALS.

Station Number.	Nitrogen.	Equivalent to Ammonia.	Phosphoric Acid.	Potash.
1	6.06	7.24	3.28	1.89
2	7.00	8.50	2.89	1.94
3	6.72	8.16	3.23	2.25
4	6.92	8.33	3.14	1.81
5	5.96	7.24	2.96	2.32
6	7.76	9.41	3.58	1.85
7	7.00	8.50	3.07	1.95
9	7.46	9.05	3.07	2.12
10	6.39	7.75	3.35	1.85
11	7.14	8.67	3.33	1.69
12	7.15	8.68	2.87	2.19
14	6.93	8.42	2.89	2.20
15	6.83	8.29	3.23	2.04
30	6.33	7.68	2.87	2.14
32	5 81	7.05	2.99	2.15
34	7.23	8.78	2.99	2.08
35	7.35	8.92	....	....
37	6.65	8.07	....	....
38	5.60	6.80	2.77	....
41	7.28	8.84	....	....
42	7.35	8.92	3.45	2.18
45	7.42	9 01	2.82	1.78
50	5.74	6 97	2.43	2.54
52	7.42	9.01	2.81	1.76
53	7.39	8.98	3.33	1.93
54	7.22	8.77	3.12	2.27
58	7.77	8.88	2.96	1.35
59	7.35	8.92	3.04	2.11
752	7.19	8.73	3.30	1.39

TANKAGE.

This fertilizer has rapidly grown in favor since its introduction into this State and is each year becoming more largely in demand. It consists chiefly of waste products from slaughter-houses, and is a mixture of partly cooked bone and meat, deposited in tanks in which the refuse from the butcher is treated to separate the grease. It, ordinarily, contains good percentages of both Nitrogen and Phosphoric Acid, the proportions of each, in general, varying almost inversely as the quantity of the other. The relative proportions of Nitrogen and Phosphoric Acid having such wide limits of variation, this class of goods, of course, exhibits a correspondingly wide range in value for fertilizing uses. When a considerable excess of bone is present, the proportion of Phosphoric Acid is largely above that of the Nitrogen, while with an excess of meat, the content of Nitrogen becomes

large and that of Phosphoric Acid becomes comparatively small. In the latter case, the action of both ingredients has been found to be more satisfactory. The Phosphoric Acid in the Tankage, being derived principally from bone, is chiefly the insoluble form, and its value is largely dependent upon the degree of fineness of division of the particles, a well pulverized sample responding more readily to the needs of the plant. Purchasers of fertilizers of this class should always buy upon a guarantee of definite percentages of Nitrogen and Phosphoric Acid, as their varying composition renders almost indispensable a knowledge of the proportions of their constituents. The bone present should also be in a very finely divided condition.

The following samples were analyzed:

Station No.

8. R. Oerling, New Orleans, La.
16. R. McCall, McCall, La.
20. R. McCall, McCall, La.
22. Sugar Experiment Station, New Orleans, La.
28. Sugar Experiment Station, New Orleans, La.
47. John N. Pharr, Berwick, La.
55. M. F. Thompson, New Orleans, La.
754. R. McCall, McCall, La.
761. R. McCall, McCall, La.
*779. Martin Thompson & Co., New Orleans, La.
*780. Martin Thompson & Co., New Orleans, La.
*781. Oaklawn Plantation, St. Mary Parish, La.

*Obtained by Commissioner of Agriculture; 779 by Armour & Co., 780 by Swift & Co., and 781 is the X round Horse Shoe Brand.

ANALYSES OF TANKAGE.

Station Number.	Nitrogen.	Equivalent to Ammonia.	Phosphoric Acid.
8	7.43	9.02	1.92
16	4.24	5.15	13.22
20	4.72	5.74	12.32
22	8.05	9.78	9.09
28	8.05	9.78	9.73
47	6.24	7.58	16.25
55	5.58	6.77	14.79
754	4.55	5.53	12.52
761	4.53	5.50	.....
779	4.60	5.59	13.44
780	7.59	9.22	10.53
781	5.00	6.07	16.72

BONE MEAL.

Bones pulverized to a greater or less degree of fineness are variously sold as "Bone Meal," "Bone Dust," "Ground Bone," etc., and in some countries are quite in demand for fertilizing purposes. They have, as yet, acquired but little favor in the South, and but few brands are upon the market in this section. As their utility is largely dependent upon the state of division of their particles, both a mechanical and chemical examination are necessary in determining their value.

Station No.

27. Sugar Experiment Station, New Orleans, La.
43. R. J. Moore, Hammond, La.
44. R. J. Moore, Hammond, La.
774. W. R. Potter, Hammond, La.

ANALYSES.

Station Number.	Nitrogen.	Equivalent to Ammonia.	Phosphoric Acid.
27	4.06	4.93	26.86
43	3.78	4.59	26.40
44	3.22	3.91	23.54
774	4.52	5.42	23.55

MISCELLANEOUS ANALYSES.

Station No.

23. Sulphate of Ammonia, from Sugar Experiment Station, New Orleans, La.
24. Dried Blood, Swift & Co., Chicago, Ill.
775. Castor Pomace, Sharff, Bernheimer & Co., St. Louis, Mo.
25. Potassium Sulphate, Sugar Experiment Station, New Orleans, La.
785. Potassium Sulphate, Southern University, New Orleans, La.
26. Muriate of Potash, Southern University, New Orleans, La.
778. Ashes Cotton Seed Hulls, Port Gibson Works, Port Gibson, Miss.

ANALYSES.

Station Number.	Nitrogen.	Equivalent to Ammonia.	Phosphoric Acid	Potash.
23	20.86	25.33	.....	.....
24	13.61	16.53	.....	.....
775	4.89	5.94	1.75	1.01
25	.....	.....	.....	42.56
785	.....	.....	.....	23.18
26	.....	.....	.....	40.95
778	.....	.....	7.63	21.83

PARIS GREEN.

The following is the law passed by the Legislature and is herein given for the guidance of dealers and farmers throughout the State:

ACT NO. 131.

SECTION 1. *Be it enacted by the General Assembly of the State of Louisiana*, That the Bureau of Agriculture shall be charged with the duties of regulating the sale and purity of Paris Green as an insecticide in this State.

SEC. 2. *Be it further enacted, etc.*, That it shall be the duty of any manufacturer or dealer in original packages of Paris Green before the same is offered for sale in this State, to submit to the Commissioner of Agriculture a written or printed statement setting forth, First: the brands of Paris Green to be sold, the number of pounds contained in each package in which it is to be put upon the market for sale and the name or names of the manufacturers and the place of manufacture. Second: the statement setting forth the amount of arsenic which they are willing to guarantee the said Paris Green to contain and the statement so furnished shall be considered as constituting a guarantee to the purchaser that every package of said Paris Green contained not less than the amount of arsenic set forth in the statement.

SEC. 3. *Be it further enacted, etc.*, That every purchaser proposing to deal in Paris Green shall, after filing the statement above provided for with the Commissioner of Agriculture, receive from the said Commissioner of Agriculture a certificate stating that he has complied with the foregoing section, which certificate shall be furnished by the Commissioner without any charge

therefor; that said certificate when furnished shall authorize the party receiving the same to deal in this State in Paris Green; that no person who has failed to file the statement aforesaid and to receive the certificate of authority aforesaid, shall be authorized to deal in this State, in Paris Green, and any person so dealing in this State without having filed the aforesaid statement and received the certificate aforesaid shall be liable for each violation to a fine not exceeding $250, which fine shall be recoverable before any court of competent jurisdiction, at the suit of the Commissioner of Agriculture or of any citizen, and shall be disposed of as hereinafter provided; *provided further*, that nothing in this section shall be construed as preventing the sale by retail dealers throughout the State of Paris Green which has already been guaranteed and labeled, as provided for in this act.

SEC. 4. *Be it further enacted, etc.*, That it shall be the duty of the Board of Agriculture, or its commissioner at the opening of each season to issue and distribute circulars setting forth the brands of Paris Green, their percentages of arsenic as claimed by the dealers and to more particularly describe them they shall be separated into two classes, viz: First, those brands containing 50 per cent. or more of arsenic shall be classed as "strictly pure," and Second, all falling below this percentage, shall be classed "impure."

SEC. 5. *Be it further enacted, etc.*, That it shall be the duty of the Commissioner of Agriculture to cause to be prepared labels of suitable material; fitted to be attached to packages of Paris Green and to have printed thereon, "Guaranteed," with a blank space into which may be stamped by the Commissioner of Agriculture the words "strictly pure," or "impure," as the guarantee may require, also the year or season in which it is to be used and a fac simile of the signature of said Commissioner. The said labels shall be furnished by the said Commissioner to any dealer in Paris Green, who shall have complied with the foregoing provisions of this act, upon the payment by said dealer to said Commissioner of fifty cents for a sufficient number to label one hundred pounds of said Paris Green.

SEC. 6. *Be it further enacted, etc.*, That it shall be the duty

of every person before offering for sale any Paris Green as an insecticide in this State to attach or cause to be attached to each package one of the labels herein before described, designating the quantity of Paris Green in the package to which it is attached. Any person who shall sell any packages of Paris Green, or any part thereof, which has not been labelled as herein provided for shall be guilty of a misdemeanor and on conviction thereof shall be fined in the sum of one hundred dollars for each omission, which penalty may be sued for either by the Commissioner of Agriculture or any person for the uses hereinafter declared. Any person who shall counterfeit, or use a counterfeit label prescribed by this act, or who shall use them a second time, shall be guilty of a misdemeanor and on conviction thereof shall be fined in a sum not exceeding two hundred and fifty dollars, one-half of which shall be paid to the informer, which fine may be doubled or trebled at each second or third conviction, and so on progressively for subsequent convictions.

SEC. 7. *Be it further enacted, etc.*, That it shall be the duty of every person who sells a package of Paris Green, upon the request of the purchaser to draw from the same and in the presence of the purchaser or his agent a fair and correct sample and to have the same securely enclosed and sealed and sent to the Commissioner of Agriculture for analysis by the Official Chemist of the State, and if upon analysis the said Paris Green shall be found below the guarantee given to the Commissioner of Agriculture and printed on the package, then the said seller shall be liable to said purchaser for all damages accruing from said difference, recoverable in any court of competent jurisdiction in the State.

SEC. 8 *Be it further enacted, etc.*, That the copy of the Official Chemist's analysis of any Paris Green certified to by him shall be admissable as evidence in any court of the State on trial of any issue involving the merits of said Paris Green.

SEC. 9. *Be it further enacted, etc.*, That the Bureau of Agriculture shall adopt needful rules and regulations providing for the collection of money arising from the sale of labels, or from any fines imposed under this act, and shall deposit the same with the Treasurer of the State.

PARIS GREEN

Is largely used in this State as an insecticide, chiefly for the destruction of the cotton caterpillar, whose ravages are frequently so injurious. This chemical consists chiefly of the "Arsenite of Copper," with a small proportion of the Acetate of Copper, and a first-class article should contain not less than 50 per cent. of arsenious acid, known in its pure state as white arsenic.

This article is frequently adulterated, and there are abundant opportunities for fraud in its purchase. Many farmers and planters in central Louisiana have made report of the ineffectiveness of the Paris Green used on their cotton during the present season. This is reported after a failure, but they failed to take samples in accordance with the above law, and therefore had no means of ascertaining positively whether fraud had been perpetrated.

The law fully protects every farmer if he will observe it. Before buying inspect packages and see that "Strictly Pure" and "Guaranteed," with the fac simile of the signature of the Commissioner of Agriculture, are stamped on each. If they are, take a sample in accordance with directions of the law, and if after using, little or no benefit accrue, have it analyzed by the Official Chemist, and if deficient, damages can be recovered.

The following samples have been received:

Station No.

808. From Jacob Geiger, Alexandria, had 53.23 per cent. of Arsenious Acid.

831. From Finley, Dicks & Co., New Orleans, and manufactured by Weil & Meissner, had 48.47 per cent of Arsenious Acid.